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ABSTRACT

North Central Technical College's (NCTC's) strategic planning and human resource development model is described in this paper in terms of its role in assisting the college's service area in adapting to new technologies. First, background information is presented on NCTC's planning process with respect to the strategic goal areas of: (1) information processing, including the goals of computer literacy and the "paperless" office; (2) electronic delivery of educational goals and services; and (3) high technology education (i.e., advanced machine tool design, microelectronics, robotics, lightwave circuit technology). In addition, the impact of these goals on shaping equipment decisions is examined. Following a look at the transformation to a high technology, information society, the implications of this transformation for postsecondary education are explored, emphasizing institutional commitment to computer literacy and the use of new technologies in public service functions. Next, NCTC's role in community renewal is described, focusing on the college's involvement in such projects as the Community Education Service's continuing education program, and the Ohio Technology Transfer Organization, a statewide network providing small businesses with access to information and services needed for economic development. The final section summarizes the role of postsecondary education in a computer literate, high technology, information society. (LL)

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ASSISTING A COLLEGE'S SERVICE AREA IN THE TRANSITION TO THE NEW TECHNOLOGY SOCIETY THROUGH STRATEGIC PLANNING AND MANAGEMENT

by

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TABLE OF CONTENTS

Abstract	i
Background on the College's Planning Process	1
The Transformation to a High Technology, Information Society	4
Implications for Postsecondary Education	5
Becoming a Community Renewal College	7
Summary and Conclusion	10
Footnotes	11

Appendices

A. OTTO and Establishments

B. Top Priorities

C. Productivity Seminar and Articulation Meeting

D. RE-DeC and SWOT Analysis

E. High Technology. What Is It?

F. High Technology Seminar

ABSTRACT

The history of the development of human society can be traced from the hunting society through the agricultural society to the industrial society. During recent years we have experienced the onset of a transformation to a new type of society. Masuda indicates:

> Mankind is now entering a period of transformation from an industrial society to an information society.... Man is now standing at the threshold of a period of innovation in a new societal technology based on the combination of computer and communications technology, quite unlike any of the past. Its substance is information, which is invisible. This new societal technology will bring about societal transformation which, in a double sense, is unprecedented.

This transformation to the information society is concerned with the shift from physical productivity of material goods to information productivity and can be expected to bring about fundamental changes in human values, in trends of thought, and in the political and economic structures of society.

The onset of the computer literate, high technology, information society has profound implications for our two-year colleges. Gollattscheck and others express the implications in terms of a community renewal role. They state:

> We believe the time has come for a fourth major development in American postsecondary education: the creation of the community renewal college. The deterioration of our communities, the increasing inability of individuals to cope with rapid change the obsolescence of individuals and social organizations, and the increasing number of citizens with educational needs who are beyond the purview of existing colleges demand a new kind of postsecondary institution. This new college must be committed to the improvement of all aspects of community life....

This paper will describe a small, two-year college's strategic planning and human resource development model and the way it is assisting the college's service area in the adaptation to the new technology of the information society.

Background on the College's Planning Process

Over the past ~~six~~ years, North Central Technical College has developed a strategic planning and human resource development model in order to remain viable in the years ahead. The College examined numerous planning models from private and public regional universities and two-year colleges. The best models specified assumptions on which to base subsequent planning and then stated goals and objectives. The College specified assumptions under ten categories and goals under seven categories at the institutional and departmental levels. These categories are as follows:

Assumptions Categories	Goals and Objectives Categories
1. Societal Context	1. Mission Attainment
2. External Agencies	2. Functional Relationships
3. Institutional Management	3. Qualitative Improvement
4. Programs	4. Program Development
5. Students and Enrollment	5. Professional Development
6. Student Services	6. Public Relations
7. Professional Development	7. Funding Sources
8. Physical Plant	
9. Equipment	
10. Fiscal resources	

Dollars are linked directly to stated goals and objectives and reviewed by a College Budget Committee comprised of twelve persons representative of the various groups within the college community.[1]

In August 1979, the President' Cabinet established a Data Processing Task Force to study the data processing/word processing needs of the College for the next several years. The DPTF surveyed all departments in an effort to develop a description of the future data processing environment. This description was sent to six vendors with an invitation to obtain additional information personally from all departments, submit a written proposal, and make a presentation. The DPTF analyzed critically the six proposals based on dimensions of the data processing environment including conversion, state of the art technology, software capability, growth potential, terminal

acceptability, hardware and software support, maintenance, security, word or text processing, space requirements, reliability, and other variables. Site visits and inquiries were made to colleges and corporations using various equipment configurations. A matrix evaluation form, using the above-stated criteria and vendor, was used to make the analysis as objective as possible. The two finalists were asked to make an additional presentation to an expanded group including persons from the Data Processing Program Advisory Committee and to complete a questionnaire developed by the group. After considerable analysis, the DPTF recommended unanimously that the College select the Hewlett Packard 3000-44. The Board of Trustees approved the recommendation on October 1, 1981. The College began the conversion to the new system almost immediately.

A capital appropriations bill contained $210,000 in technical education equipment funds and $1.8 m for equipment linked to a $3½ m building renovation project. In order to make wise use of these funds, the President's Cabinet, Academic Council, and other key persons, held a discussion on strategic goal areas on January 26, 1982. These strategic goal areas were as follows:

I. Information Processing
   A. Computer Literacy
   B. The Office of the Future or the Paperless Office

II. Electronic Delivery of Educational Programs and Services
   A. Interactive Diagnostic and Instructional Systems
   B. Telecommunications and Teleconferencing Systems

III. High Technology
   A. Advanced Machine Tool Design
   B. Microelectronics
   C. Robotics
   D. Lightwave Circuit Technology

Computer literacy can range from the ability to read a printout through systems analysis and design. Between these two ends of the computer literacy continuum would be such competencies as (1) the use of word processing equipment as input; (2) use of optical mark sensing equipment in test grading and upgrading the student data base; (3) computer assisted or managed instruction,

either using a "canned" program or writing a program; (4) conducting longitudinal studies of student progress; (5) a broad range of applications in business and industry such as statistical quality control, inventory control, computer assisted design (CAD) and computer assisted manufacturing (CAM); and (6) language proficiency in a broad range of data processing engineering contexts. (See FIGURE 1) Equipment decisions were then made to purchase selected items from the $210,000 authorization and other items from the $1.8 m authorization, including a HP 3000-64 for the Data Processing Program.

The College went through a similar experience with word processing. The strategic goal area of the office of the future or the paperless office includes (1) word processing, (2) personal computers, (3) electronic mail (4) computer assisted retrieval, (5) computer output microfilm, (6) facsimile devices, (7) teleconferencing, and reprographics. (See FIGURE 2) Specification sheets were designed by a Word Processing Task Force and mailed to vendors. The WPTF listened to presentations from nine vendors the first two weeks of June. Selected vendors were asked to demonstrate, on-site, the interaction of their equipment with the HP 3000. The Philips Micom system was purchased including 3 terminals for administrative support and 16 terminals for the Secretarial Science Technology. In addition to interaction with the HP 3000-44 and -64 systems, the Philips Micom system can interact with the computer systems that were installed in the Engineering Division.

Computers were first used in the electronics laboratory beginning in the 1980-81 year. By the start of the fall quarter in 1982, the electronics laboratories had a total of 26 smart terminals and programmable logic controllers and computer aided design (CAD) was introduced in the Drafting and Design Technology with 4 Autotrol design units and a VAX 750 computer. The manufacturing processes laboratory acquired 2 new 15" lathes, 1 Bridgeport mill with digital readout, and 2 computer numerical control (CNC) lathes. The hydraulics laboratory was equipped with 8 Sperry-Vickers training units.

FIGURE 1

ELEMENTS OF THE STRATEGIC GOAL OF
COMPUTER LITERACY

Systems Analysis and Design

Language Proficiency
- Data Processing
- Engineering

Application
- Computer Aided Design (CAD)
- Computer Aided Manufacturing (CAM)
- Inventory Control
- Statistical Quality Control

Conducting Longitudinal Studies of Student Progress

Computer Assisted/Managed Instruction
- Writing a Program
- Using a Program

Use of Optical Mark Sensing Equipment
- Upgrading Student Data Base
- Test Grading

Use of Word Processing Equipment As Input

Reading a Printout

FIGURE 2

ELEMENTS OF THE STRATEGIC GOAL OF

THE OFFICE OF THE FUTURE OR THE PAPERLESS OFFICE*

WORD PROCESSING

development, revision, and production of documents such as letters, reports, labels, and directories.

PERSONAL COMPUTERS

small but powerful computers that can provide groups of users with capabilities such as filing, retrieval, sorting, word processing and report creation without the need for extensive programming or reliance on a large central processor.

ELECTRONIC MAIL

electronic work stations and message systems to send messages to one or more addresses where the communications can be read on their electronic equipment and respond at their convenience.

COMPUTER ASSISTED RETRIEVAL (CAR)

a combination of a computer system and a microfilm storage and retrieval device to get information from massive files that are stored on roll microfilm or microfiche.

COMPUTER OUTPUT MICROFILM (COM)

a computer process which produces information on microfilm instead of on paper.

FACSIMILE DEVICES

a way of transmitting pages of copy, such as correspondence or contracts, over long distances.

TELECONFERENCING

a method of simultaneous remote communication involving many people that may be as simple as a speakerphone conference call or as elaborate as a live video conference with terminals or facsimile devices for transmitting images, whether graphic or narrative.

REPROGRAPHICS

the use of electronics in the preparation of documents that can include input of original text through word processors linked directly to electronically controlled equipment that can set type in a multitude of type styles and sizes as well as automatically generate logos, form outlines, and charts and graphs.

*Source: H. Gerald Moody, "The Face of the Future: The Office," Voc Ed, January/February, 1982, pp. 36 and 83.

Thus, the comprehensive planning process that produced the strategic goal areas of information processing and high technology had an impact on shaping equipment decisions tied to educational objectives. Personnel began to attend vendor schools and other training programs in order to develop competencies necessary to operate the equipment and teach in the programs. The strategic goal area of electronic delivery of educational programs and services was discussed at a meeting on February 9, 1982. An "Electronics Communications Rennovation Project" was developed and submitted to The Ohio Board of Regents. The project is scheduled for 1985-86.

The Transformation To A High Technology, Information Society

The history of the development of human society can be traced from the hunting society through the agricultural society to the industrial society. In the hunting society, mankind was concerned primarily with extracting things from nature. The transformation to the agricultural society was slow and based on rather simple technological innovation. The hunting and agriculture societies can be characterized as interactions between people and nature. In comparison, the transformation from the agricultural society to the industrial society occurred more quickly and was the result of technological advances in energy, transportation, communications, raw materials, and research and development networks. The industrial society can be characterized as interactions between people and goods or fabricated nature. More recently, advances in the industrial society have been the result of the integration of macro technological systems, the aggregation of complex technological developments in each of the above mentioned networks.

During recent years we have experienced the onset of a transformation to a new type of society. Masuda indicates:

> Mankind is now entering a period of transformation from an industrial society to an information society.... Man is now standing at the threshold of a period of innovation in a new societal technology based on the combination of computer and communications technology, quite unlike any of the past. Its substance is information, which is invisible. This new societal technology will bring about societal transformation which, in a double sense, is unprecedented.[2]

This transformation to the information society is concerned with the shift from physical productivity of material goods to information productivity and can be expected to bring about fundamental changes in human values, in trends of thought, and in the political and economic structures of society. This learning and information society will be characterized as interactions between people and ideas and knowledge.

Implications for Postsecondary Education

The onset of a transformation to a new type of society is occurring at a time when illiteracy is a major problem in this nation. Numerous articles have been written in recent years about the growing number of functionally incompetent,[3] scientific illiterate,[4] and the growing illiteracy problem for business when employees lack reading and writing skills necessary for their work.[5] An article in the Boston Sunday Globe indicated that it is scandalous that Johnny and Janie cannot write when they enter college "but it is perhaps less scandalous than the possibility that, when they emerge as bachelors of arts or science, they may be unable to describe either discipline in acceptable written English."[6] The problem is compounded when to these forms of illiteracy are added (1) occupational illiteracy, (2) economic illiteracy, (3) research illiteracy, (4) management systems illiteracy, (5) information processing illiteracy, and (6) technologic illiteracy. Human resource development, the prevention of human obsolescence, is the biggest challenge to postsecondary education in the years ahead.

The onset of the high technology, information society has profound implications for an institutional commitment to computer literacy, use of new technology, and the public service function. Gollattscheck and others express the implications in terms of a new role for American postsecondary education. They state:

> We believe the time has come for a fourth major development in American postsecondary education: the creation of the community renewal college. The deterioration of our communities, the increasing inability of individuals to cope with rapid change, the obsolescence of individuals and social organizations, and the increasing number of citizens with educational needs who are beyond the purview of existing colleges demand a new kind of postsecondary institution. This new college must be committed to the improvement of all aspects of community life....[7]

The institutional commitment to computer literacy carries with it a mandate for human resource development. In the field of engineering, for example, increasing competition in world markets has made manufacturers realize that they must do more with less, and do it better. Many manufacturers feel that an investment in technology will help them become more effective and efficient in what they do. Technological advances have been made in the design, engineering and manufacturing processes through Computer Aided Design (CAD), Computer Aided Engineering (CAE), and Computer Aided Manufacturing (CAM). Other terms used to describe technological advances include Group Technology, Manufacturing Planning and Control Systems, Automated Materials Handling, Materials Handling, Materials Requirements Planning (MRP), scheduling approaches such as Automated Time Standards (ATS), Computer Assisted Process Planning, and Manufacturing Resources Planning (MRPII). When these technological advances are combined in an effort to move toward the "Factory of the Future," the combination is referred to as Computer Integrated Manufacturing or Integrated Computer Aided Manufacturing.

Similar changes are occurring in business extending from market research through analysis of consumer satisfaction and in health care extending from health promotion through tertiary, long-term, extended care. Such changes mandate that postsecondary education take a proactive leadership stance in assisting the college's service area understand and adjust to the new technology.

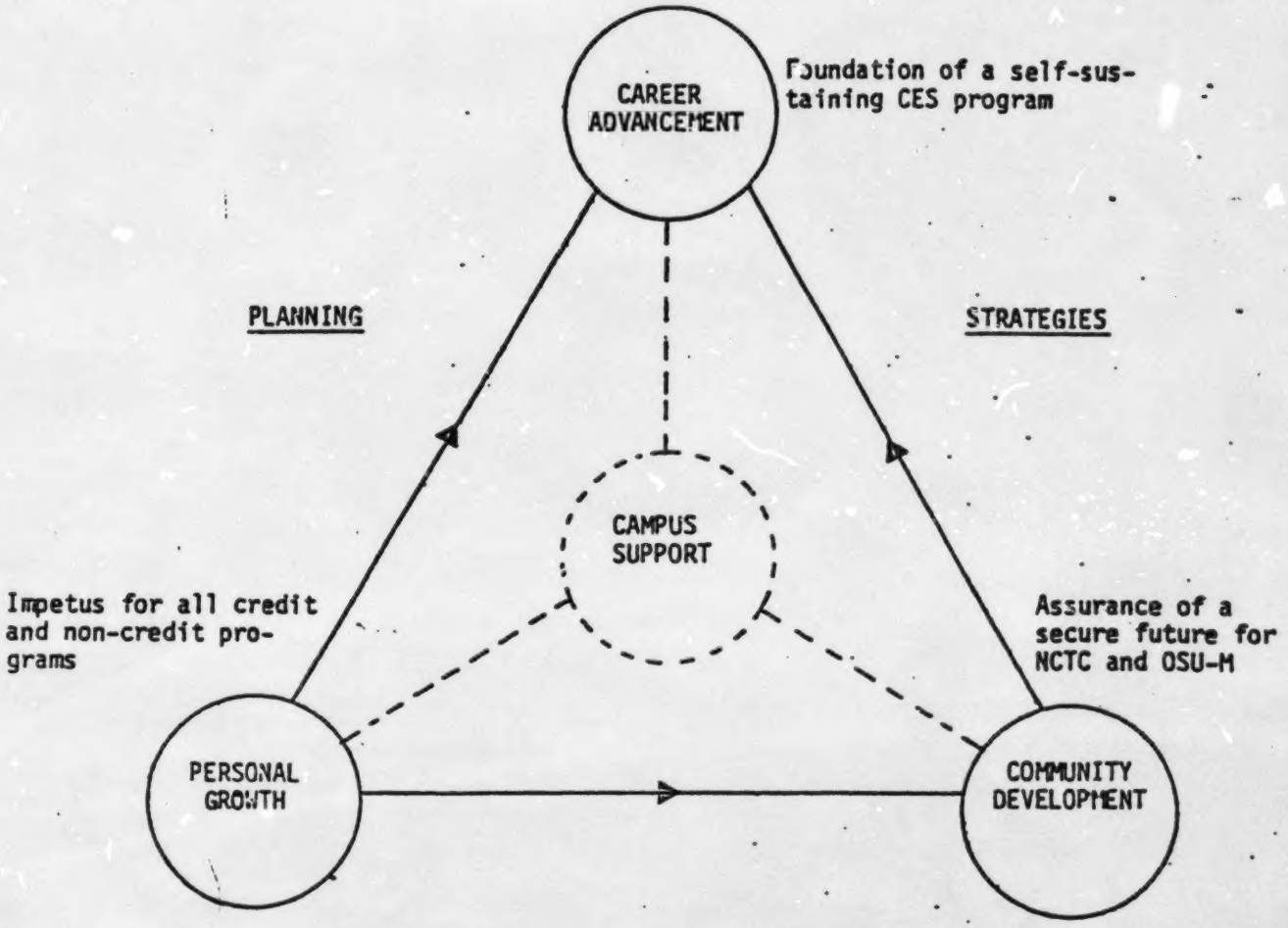
Becoming a Community Renewal College

Between August 1978 and December 1979, North Central Technical College was involved in a project to retrain the unemployed in Richland County. Laudable and necessary as the project was, it represented a tertiary rehabilitation model as opposed to a primary or secondary prevention model. The intervention strategy was the result of a crisis as opposed to a process designed to diagnose a potential problem and prevent the development of the malady. Nor was it a secondary prevention model, that of identification of an illness at an early stage in order to prevent its complication. The intervention occurred only after the crisis struck the fatal blow even though early warning signals had been transmitted over the past several years.[8] Since then the College has become proactive to the needs of its service area through strategic planning and management.

One of the first decisions by the College to take a proactive role in community renewal was the creation of Community Educational Services. CES was designed by NCTC and The Ohio State University - Mansfield in 1980 to provide campus out-reach in the areas of (1) personal growth, (2) career advancement, and (3) community development. (See FIGURE 3).

Research data suggest that our future is, for the most part, dependent upon the preservation, expansion, and creation of small businesses. In Ohio, the 189,000 small firms created 66 percent of all new jobs in the private

COMMUNITY EDUCATIONAL SERVICES



Mission Priorities

1) Professional/career/occupational advancement
2) Community development/citizen involvement
3) Personal and family development/security
4) Cultural/technical awareness
5) Energy education/environmental awareness
6) Creative uses of leisure/recreation

sector between 1969 and 1976; 80 percent of new jobs came from businesses less than five years old. Fifty percent of the state's workforce is classified as employed by small business; these firms generate 51 percent of the gross state product. Small businesses, however, have demonstrated they are unable to afford the type of assistance which is usually available to large corporations.[9]

Part of Ohio's response to the plight of small businesses was the creation of the Ohio Technology Transfer Organization and the Ohio Job Training Consortia. OTTO is a statewide network consisting of The Ohio State University and two-year institutions working with state and federal agencies to provide small business and industry access to information, advice, and services that are essential to economic development and job growth. OTTO agents have access to computerized data bases which include the National Technical Information Service and more than 200 Federal R & D laboratories and centers representing 11 Federal agencies in the Federal Laboratory Consortium.[10] OJTC is intended to help business and industry diagnose training needs and develop programs in response to diagnosed needs. College credit programs are run through the academic programs and continuing education programs are run by CES. OTTO and OJTC representatives at NCTC assist/help establishments in the College's service area. (See APPENDIX A)

The comprehensive institutional planning process, the purchase of new technology, and the commitment to become a community renewal college led to the designation of three top priorities (1) human resource development, (2) computer literacy, and (3) college marketing. (See APPENDIX B). These top priorities provide the impetus for a broad range of initiatives such as seminars, workshops, and articulation meetings. For example, on September 24, 1982, the College conducted a seminar on the topic "Advancing Productivity Through Systems Automation" for corporate personnel. On December 9, 1982, twenty faculty from NCTC visited Mansfield Senior High to discuss standards

and articulation. (See APPENDIX C for both programs).

During recent years the College has assisted agencies with developing a more sophisticated approach to planning and management. On February 15, 1983, the OTTO Advisory Committee hosted the Executive Director of the Richland Economic Development Corporation and members of Leadership Unlimited, a program to prepare community leaders for the decade ahead. The program for that meeting was to (1) discuss the information society and NCTC's niche, (2) review the progress being made by RE-DeC, and (3) discuss methods for collaboration. During that meeting the author distributed an analysis of strengths, weaknesses, opportunities, and threats derived from several studies completed in the past. The College, including OTTO, is committed to assisting RE-DeC in its economic development plan. (See APPENDIX D)

As a part of its continuing commitment to inform residents of the service area about state-of-the-art technology, the College conducted a "High Technology Seminar" on March 17, 1983. In preparation for that seminar, the monthly College publication Challenge contained an article entitled "High Technology. What Is It?" The article reviews a number of terms used to describe advances in technology such as "high," "new," "appropriate" and "levels of development" as an attempt at adding clarity to this concept. (See APPENDIX E for the March issue of Challenge and APPENDIX F for materials about the High Technology Seminar).

Other activities which are already scheduled include an Open House on May 15, 1983, a Strategic Planning Seminar for the Mohican Valley Chapter of the American Society for Training and Development on May 19, 1983, and a School-College Articulation program on October 7, 1983. Through these activities The College is attempting to assist the service area in the adaptation to the new technology of the information society.

Summary and Conclusion

The transformation to a computer literate, high technology, information society has numerous implications for a new role for postsecondary education. These implications hold for primary programs in business, engineering, and health care as well as support programs such as institutional strategic planning, management, and evaluation. Institutions must develop strategic planning and management processes which help keep them viable in the years ahead. Such processes will mandate computer literacy competencies for all personnel. Masat has expressed the need for computer technology and literacy as follows:

> Computer technology and literacy are two of our nation's most important resources. With about half the labor force holding information and computer-related jobs and earning more than half the labor income, information has become our major national commodity. Moreover, our society has become irreversibly dependent on computers, particularly in the areas of business, energy, space exploration, research, and national security. Our ability to use computer technology thus contributes significantly to our nation's present and future intellectual and economic strengths. For colleges and universities, computer literacy is increasingly needed for research and development, for efficient and effective management, and for the use of sophisticated technological equipment.[11]

Numerous issues will be important in the 1980's. No issue, however, will be as important as the relationship of postsecondary occupational education to the economy. Foreign competition, technological advances, changes in productivity, high cost, plant and human obsolescence, and infrastructure deterioration have resulted in massive dislocations in our economy. In the past, postsecondary education has seen its relationship to the economy primarily in terms of providing an educated workforce. In the future, this focus will continue to be important but not sufficient. New, expanded relationships will be required between postsecondary education and the economy in the computer literate, high technology, information society. Postsecondary education must take a proactive role with regard to computer literacy in the transformation to the high technology, information society.

FOOTNOTES

1. Warren H. Groff, Building Futurism into the Institution's Strategic Planning and Human Resource Developmenet Model, paper presented at the Nova University Practitioners' Hall of Fame 1982 Summer Institute. ED 219 007 and HE 015 243.

2. Yoneji Masuda, The Information Society As Post-Industrial Society (Tokyo, Japan: Institute for the Information Society, 1980).

3. "Ahead: A Nation of Illiterates?" U. S. News and World Report, May 17, 1982, pp. 53-57.

4. Frank Kotulak, "Are Americans Sinking into Scientific Illiteracy?" News Journal, February 21, 1982, p. 3-C

5. Sheila Tefft, "Illiteracy Problem For Businesses," New Journal, February 28, 1982, p. 1-E.

6. David B. Wilson, "The Graduates Can't Write: Illiteracy in America?" Boston Sunday Globe, May 17, 1981, p. 1 +.

7. James F. Gollattscheck, Ervin L. Harlacher, Elenor Roberts, and Benjamin R. Wygal, College Leadership for Community Renewal, (San Francisco: Jossey-Bass, 1976).

8. Warren H. Groff, "Technical Education: A Catalyst for Local Economics," Journal of Studies in Technical Education, Volume III, Number 4, Fall 1981, pp. 368-380.

9. Robert E. Bailey, "The Ohio Technology Transfer Organization: An Experiment in Cooperative Assistance," A paper presented at the Technical Education Division Program, 59th Convention of the Ohio Vocational Association, October 3, 1980.

10. Warren H. Groff, "Statewide Coordination of Technology Transfer," presented at the Second National Conference on the Role of Community Colleges in the National Conference on the Role of Community Colleges in the National Technology Program, Detroit, October 20, 1981.

    _____, "Strategic Planning of Technology Transfer," presented at the Economics Section Colloquim on "Emerging Technologies and Their Economic Impact," Ohio Academy of Science, April 23, 1982.

11. Frances E. Masat, Computer Literacy in Higher Education AAHE ERIC/Higher Education Research Report No. 6, 1981, p. 1

APPENDIX A

A FEW EXAMPLES OF
THE PROBLEM AREAS OTTO HAS WORKED
ON DURING 1982....

ABRASION
ABSENTEEISM
ADHESIVES
ANODIZING
ARCHITECTURE
AUTOMOTIVE
AVIATION

BEARINGS
BONUS
BUSINESS MANAGEMENT

CAD/CAM
CALIBRATION
CARBON BLACK
CASH FLOW
CASTING
CARDIOLOGY
CHEMISTRY
COAL
COMPENSATION
COMPUTER CHIPS
COMPUTER HARDWARE
COMPUTER SOFTWARE
CONSERVATION
CONSULTANTS
CORROSION
COST ANALYSIS

DATA BASES
DATA PROCESSING

ECONOMIC DEVELOPMENT
ELECTRONICS
EMPLOYEE OWNERSHIP
ENERGY
ENERGY CONSERVATION
ENERGY FROM WASTE
ENTERPRENEURSHIP
ENVIRONMENT
EQUIPMENT
EXPORT

FASTENING TECHNIQUES
FIBER OPTICS
FIBERGLAS
FINANCIAL MANAGEMENT
FIRE PROTECTION
FLEXTIME
FORECASTING
FRANCHISING

GASOHOL
GALVANIZING

HAZARDOUS WASTE
HEATING
HUMAN FACTORS
HYDRAULIC SYSTEMS
HYDROPOWER

INCINERATION
INNOCATIONS
INTERIOR DESIGN
INVENTIONS
INVENTORY CONTROL

LASERS
LIGHTING
LOANS
LUBRICATION

MACHINE TOOLS
MARKETING
MATERIALS HANDLING
MENTAL HEALTH
MERIT PAY
METAL FINISHING
METAL POWDER
MICROWAVE
MOTORS, ELECTRIC

NEW PRODUCT DEVELOPMENT
NUCLEAR ENERGY
NOISE CONTROL

OFFICE MANAGEMENT
ORDER PROCESSING

PATENTS
PERSONNEL MANAGEMENT
PHOTOCHEMICAL MACHINING
PLATING
PRODUCTIVITY
PRODUCTS LIABILITY
PROFIT SHARING
PUBLIC RELATIONS

QUALITY CIRCLE

REAL ESTATE
RESEARCH & DEVELOPMENT
ROBOTICS

SMALL BUSINESS
SOLDERING
STANDARDS & SPECIFICATIONS
SURFACE FINISHING

TELECOMMUNICATIONS
TOXICOLOGY
TRADEMARK
TRAFFIC CONTROL
TRANSPORTATION

URBAN DEVELOPMENT

VEHICLE FLEET MANAGEMENT
VIBRATION

WAGES
WAREHOUSES
WEIGHTS AND MEASURES
WELDING
WIRE
WORKMEN' COMPENSATION

ZINC

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NUMBER OF EMPLOYEES & ESTABLISHMENTS BY EMPLOYMENT SIZE

	Number of Employees	Number of Establishments by Employment Size									
		Total	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000+
Richland - Total	47,680	2,498	1,294	500	326	241	71	43	13	4	6
Manufacturing	20,297	191	42	25	28	45	17	18	8	3	5
Retail Trade	9,433	756	357	173	109	87	19	10	1	-	-
Finance	2,439	241	137	57	22	18	2	4	1	-	-
Services	7,925	667	413	124	65	37	17	9	1	-	1
Crawford - Total	17,820	930	502	192	109	84	17	14	5	5	2
Manufacturing	10,222	91	17	13	15	17	9	9	5	4	2
Retail Trade	2,843	288	147	64	40	33	3	1	-	-	-
Finance	484	75	52	11	5	6	1	-	-	-	-
Services	2,509	235	142	51	27	9	2	3	-	1	-
Ashland - Total	14,801	835	487	172	76	64	14	7	10	4	1
Manufacturing	8,470	70	15	10	9	12	6	5	8	4	1
Retail Trade	2,540	242	127	59	21	29	6	-	-	-	-
Finance	402	60	37	17	1	4	1	-	-	-	-
Services	2,086	233	156	41	25	7	1	1	2	-	-
3-County Total		4,263	2,283	864	511	389	102	64	28	13	9

APPENDIX B

TOP PRIORITIES

Numerous issues will be important in the 1980s. Foreign competition, technological advances, changes in productivity, high costs, plant obsolescence, and infrastructure deterioration are causing major dislocations in our economy. It is in that context that North Central College must chart a course of action via strategic planning and management. Through strategic planning and management the College can strive to maintain institutional quality through the allocation of scarce resources in a cost effective manner. At the same time the College can move in the direction of new program development consistent with the commitment of becoming a "high technology training center." In keeping with these directions, the college planning process has yielded three top priorities:

1. Human Resource Development
2. Computer Literacy
3. College Marketing

A more detailed explanation of these priorities is as follows:

Human Resource Development

Students

A. Development of students who have a goal-oriented perspective on life — contact with the present or an "eye" to the future. Satisfied with present skills or developing new skills for the future.

B. Take students where they are in terms of basic skills and move them to meet the standards of NCTC.

C. Development of living skills oriented toward productive work and productive leisure time.

D. Provide an adequate learning environment which allows students to develop the motivation to "reach".

College Personnel

A. Provide an environment which is conducive to trial and error. The stimulation of experimentation.

B. Provide an environment which is conducive to personal and professional growth.

C. Provide an environment which stimulates the motivation for learning state-of-the-art.

D. Provide an enabling environment for personal and professional gratification.

Computer Literacy

College Personnel

Provide an environment which enables each faculty and staff member to effectively use the information processing capabilities of computers.

Curriculum

To provide all students with the opportunity of using the information processing capabilities of computers.

College Marketing

The term marketing is used in its broadest context. Often, we refer to the 4 P's — Product, Place, Price and Promotion.

A. Product - This is the NCTC curriculum and service offerings such as career planning, extra-curricular activities, counseling, placement, etc. Characteristics such as quality and quantity are involved.

B. Place - This refers to the location where the product is delivered — on campus and/or off campus

C. Price - Is the product or service offered at the right price? (Instructional and general fee or other charge of some kind)

D. Promotion - Are the curricula and services being effectively communicated so as to attract the desired student body?

APPENDIX C

ADVANCING PRODUCTIVITY
THROUGH SYSTEMS AUTOMATION

SEPTEMBER 24, 1982

-MORNING-

All morning presentations will be in room 212 -- Bromfield Hall.

-AGENDA-

I. Dr. Henry R. Fallerius — President, North Central Technical College

II. Terry Breinich — Assistant Professor, Data Processing, North Central Technical College
"Data Processing Curriculum"

III. Karen Stansbery — Manager of Applications Programming, Interstate Business Services, Inc.
"Job Performance of NCTC Data Processing Graduates"

IV. Coffee Break

V. Donald M. Vicchiarelli — Division Systems Manager, General Tire and Rubber Co.
"Re-industrialization: Social Adjustment"

VI. Robert A. Slapnik — Sales Representative, Hewlett-Packard Co.
"Hewlett-Packard's Information Productivity Network"

-LUNCH-

Lunch will be served in the cafeteria, Dwight D. Eisenhower Memorial Center, courtesy of Hewlett-Packard Company.

-AFTERNOON-

All afternoon presentations and hardware exhibits will be scheduled in the Technical Education Center.

Sessions #1-3 are scheduled from 1-2 p.m. and are repeated from 2:15-3:15.

Sessions #3-6 will display hardware/software at your convenience after 12:30.

SESSION		TIMES	ROOM
1	Manufacturing Software Systems	1:00 and 2:15	111
2	Data Base Management	1:00 and 2:15	114
3	HP 3000 System Overview	1:00 and 2:15	158
4	Electronic Mail & Word Processing	Open after 12:30	179
5	Manufacturing & Business Graphics	Open after 12:30	181
6	Personal Business & Desktop Computer	Open after 12:30	181

ARTICULATION MEETING

MANSFIELD SENIOR HIGH SCHOOL

DECEMBER 9, 1982

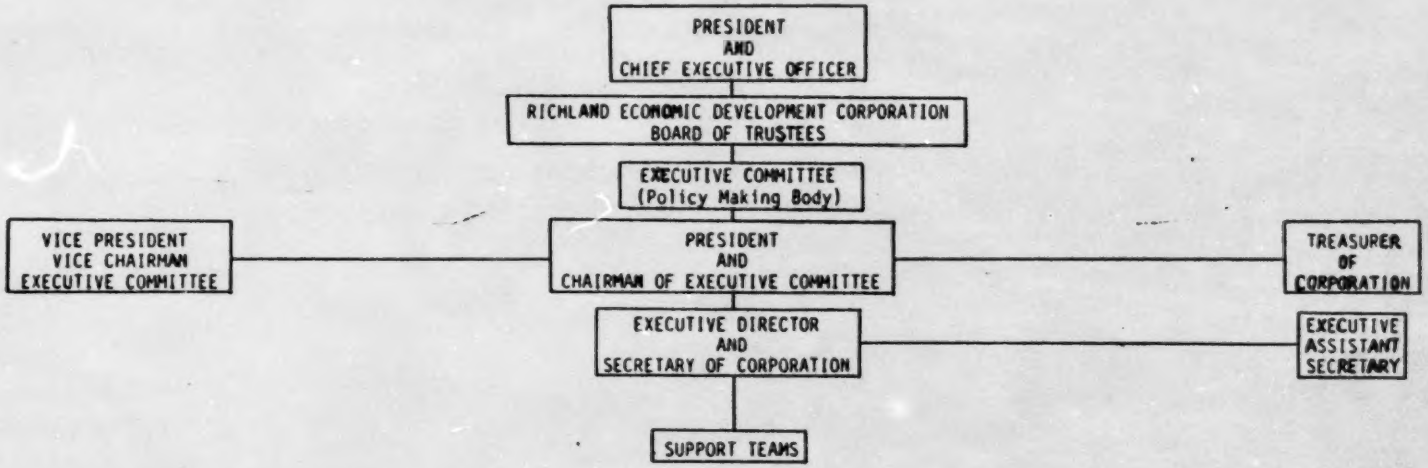
AGENDA

1. NCTC Requirements and Standards
2. MSHS Requirements and Standards
3. Articulation
4. Charting a Course of Action
5. The Next Meeting (NCTC Hosting)

NCTC Participants

Department	Persons
English	Paul Sukys Dan Richards Joan Robertson
Math	Phil Marcus
Science	Joe Noser
Social Sciences	John Brent Dick Goetz Ben Oswald
Administration	Gary Rustad Peter Grant
Home Ec/Nursing	Hazel Parsons
Handicapped	Bruce Sliney
Electronics	Joe Wagner
Physical Education	Sue Paynter
Machine Trades, Auto Mechanics, Welding, and Wood	Harold Goldenberg
Drafting	Robert Davies
Business:	
Accounting	Jay Jacquet David Taylor
Secretarial	Eola Snyder
Dist. Education	James Donnelly

RICHLAND ECONOMIC DEVELOPMENT CORPORATION ORGANIZATIONAL CHART



EDUCATION SUPPORT TEAM - K. JACK BARGAHISER, CHAIRMAN

GOVERNMENTAL AFFAIRS - CURTIS FIELDS, CHAIRMAN

INTERNATIONAL TRADE - LOU FRITZ, TEMPORARY CHAIRMAN

LABOR MANAGEMENT COMMITTEE - MALCOLM CASH, CHAIRMAN

QUALITY OF LIFE - REV. CLIFFORD D. SCHUTJER, CHAIRMAN

LONG RANGE PLANNING - RE-DeC EXECUTIVE COMMITTEE

TRAVEL AND TOURISM - MARY JANE SAYLOR, CHAIRMAN

PUBLIC RELATION AND ADVERTISING - GUNTHER MEISSE, CHAIRMAN

FINANCE AND BANKING - BILL JILEK, CHAIRMAN

RETENTION AND EXPANSION - WARREN RUPP, CHAIRMAN

REAL ESTATE AND SITE CONTROL - CHARLIE SWAIN, CHAIRMAN

TRANSPORTATION - JAMES C. GORMAN, CHAIRMAN

CONFIDENTIAL CLIENT SALES - LOU FRITZ, CHAIRMAN

COMMUNICATIONS - LYNN ECKARDT, CHAIRMAN

APPENDIX D

SWOT ANALYSIS

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Diversity of Business Establishments	Intramural Strategic Planning	Telecommunications	
Land Availability	Intermural Strategic Planning	United Telephone Co.	
Transportation - Rail, Highway, Airport	Intellectual Capital Formation	NASA Lewis Research Center	
Water	Apprenticeship Training	Robotics	
Utilities		Center for Robotics - Michigan	
Leadership/Organizations		Robotics Institute - Pittsburgh	
Medical Facilities		Just-In-Time Manufacturing	
Geographic Location		Design	
Diversity/Quality of Life Elements		Manufacturing	
Fine Arts Center			
Renaissance Theatre			
Symphony (Adult/Youth)			
Little Theatre			
Sports (Skiing, Auto Racing)			
Secondary Schools			
Madison School District (CSM-LS)			
The Mansfield University Foundation			
Postsecondary Education Institutions			
Ashland College			
North Central Technical College			
The Ohio State University-Mansfield			
Mohican Valley Chapter ASTD			
Mid-Ohio Council of Teachers of Math			
Ohio Technology Transfer Organization			
Leadership Unlimited Class #1			
RE-DeC			
Ohio Board of Regents Ohio Business, Ed., and Govt. Alliance			
The Battelle Institute			

APPENDIX D

HIGH TECHNOLOGY. WHAT IS IT?

An article in the Wall Street Journal stated that "'high tech' is looking more and more like the latest development fad to hit the streets of America." The author goes on to state that "the concept of high technology or advanced technology is too vague to be useful. Some 'most advanced' technology exists for producing almost every good or service traded in the economy."

In some instances it seems more appropriate to refer to advances in science and technology as "new" technology. When speaking of the transfer of technology, the phase "appropriate technology" is more in keeping with the idea that is being communicated. Watcke attempted to display stages of technology development and relate that concept to curriculum development and point to the need to develop partnerships within a college's service area. A modified display of "levels of Technology Development" is displayed in FIGURE 1.

FIGURE 1

LEVELS OF TECHNOLOGY DEVELOPMENT

	LOW TECHNOLOGY	MEDIUM TECHNOLOGY	HIGH TECHNOLOGY
Drafting	T-Square and Drawing Board	Manually Operated Drafting Machine	Computer Aided Design
Calculating	Manual Calculators	Electronic Calculators	Microcomputers
Typewriters	Manual Typewriters	Electronic Typewriters	Electric Typewriter with Storage
Tools	Hand Tools	Machine Tools	Computer Numerical Control
Biology	Basic Laboratory Analysis Equipment	Genetic Engineering	Cloning
Electricity	Vacuum Tubes	Digital Electronics	Laser/Electro-Optics

Adapted from Ronald R. Watcke, "Partnership Vital to High Tech," Community and Junior College Journal, December/January 1982-83, 53 (4), pp. 28-31+.

"High Technology" could be defined as any influence of the computer on (1) engineering and design (2) planning and scheduling, (3) fabrication and assembly, and (4) marketing and distribution. Such a definition seems most appropriate to the manufacturing of durable goods. With this definition the Task Force on High Technology should be interested in concepts related to the automated factory (AF) or the "factory of the future." Terms associated with these concepts are as follows:

Computer Aided Technology	CAT
Computer Aided Design	CAD
Computer Aided Enginering	CAE
Computer Aided Manufacturing	CAM
Group Technology	GT
Manufacturing Planning and Control Systems	MPCS
Automated Materials Handling	AMH
Materials Requirements Planning	MRP
Automated Time Standards	ATS
Computer Assisted Process Planning	CAPP
Manufacturing Resources Planning	MRP II
Computer Integrated Manufacturing	CIM
Integrated Computer Aided Manufacturing	ICAM
Data Based Management Systems	DBMS
Computer-Aided Inspection Test and Control	CAITC
Finite Elements Analysis	FEA

Business and industry, however, is not the only establishment experiencing the impact of the computer. Computer aided transcriptions are becoming a practice in reporting in the courts. In the education industry, computer-aided instruction and computer-managed instruction are appropriate to include in the definition. Other terms are also appropriate. Telematics, for example, is a collective term including computer, information, and telecommunication technologies.

Several lists of advances in technology have appeared in various journals. High Technology lists the following fields experiencing rapid growth:

> .Genetic engineering. The technology associated with putting biological knowledge to work. Applications in the chemical industry, pharmaceuticals, agriculture.
>
> .The electronic office. Multifunction work stations. Word-speech recognizers and simplified programming that will humanize the interface between people and machines. The costs, the benefits, the potential savings.

.Automotive technology. Improvements in auto engines that will save money and reduce emissions. Research to overcome the limitations of potential competitors to the internal combustion engine.

.Communications. Interactive television: the technology and its likely impact on entertainment, education, business, banking, retailing. Electronic mail. High-speed facsimile. Microwave links between offices. Teleconferencing.

.Construction. Energy-efficient architecture. Cost-saving materials. Labor-saving methods.

.Space technology. The Space Shuttle: how it will boost our capability to orbit satellites and even build space stations. New uses for orbiters -- including navigation, geophysical exploration, crop studies, weather prediction.

.Energy. Thin-film photovoltaic cells and the promise of low-cost solar-generated electricity. Improved batteries and storage systems. The technology of fusion power and the obstacles that must be overcome.

.Military/aerospace technology. Rapid strike force equipment. Stealth aircraft. Passive detection systems. Automatic target recognition systems. Laser weaponry.

.Transportation. Light-rail vehicles. Magnetic levitation for high-speed trains. Computer-tracked fast freight. Hydrofoils. Dual-mode personal rapid transit.

.Medical technology. Implantable replacement body organs, artificial limbs, diagnostic devices, information retrieval and medical data systems.

.Robotics. The move toward fully-automated assembly lines. New machining methods. Energy-efficient production methods.

.New materials. Fiber-reinforced composites (carbon, baron, etc.) and "foamed" metals, which combine high strength with light weight. Inexpensive alloys that can substitute for more costly metals. Superconductors. New coatings, adhesives and other materials.

.Measurements. New tools for measuring a wide range of phenomena. High-speed observation of dynamic processes, chemical reactions, sub-atomic particles. Cosmological observations.

.Personal computers. What's new and what's next. What they offer and how they can be used. Advances which will make them more useful, more popular.

.Artificial intelligence. Machines that think for themselves -- or for you. (The question is not whether this will happen, but when.) And how we'll deal with the social dislocations as menial work is phased out..

Several persons have listed high technology industries or devices and processes which are commonly encompassed by the term high technology. Two such lists are displayed in FIGURE 2. The "High Technology Industries" list was developed by Watcke and the "Devices and Processes" list was developed by Walter Edling of Lorain County Community College.

FIGURE 2

HIGH TECHNOLOGY INDUSTRIES	DEVICES AND PROCESSES
Genetic Engineering	Computers (including personal computers)
Telecommunications Equipment	Lasers
Electronic Components	Fiber optics
Pharmaceuticals/Health Chemicals	Nuclear processes
Energy and Power Supplies	Microelectronics (and nano- and picoelectronics)
Bio-Medical Equipment (medical scanners, pacemakers, implants)	Artificial intelligence
Computer Equipment (peripherals)	Computer Numerical Control (CNC) and Direct Numerical Control (DNC)
Computer Software and Supplies	Computer Aided Engineering and Design (CAE, CAD)
Security Detection Equipment (fire emergency)	Computer Aided Manufacturing (CAM) and Integrated Computer Aided Manufacturing (ICAM, CIAM)
Home Computers	Alternate energy forms (Solar cells, etc.)
CAD/CAM Systems	Computer-supported Management and Planning Systems
Mainframe Computers	Robots
Office Automation Equipment (word processing)	Molecular biology
Semiconductors/Integrated Circuits	Voice Recognition
Lasers and Infrared Equipment	Holography
CATV (cable television)	Telecommunications
Microwave Equipment	
Military Systems	
Test Equipment (quality assurance)	
Electromechanical Components (robots and numerical control)	

Helms lists advances in communications, computers, robotization, biotechnology, electric power, fuels technology, material technology, and body technologies and the key words associated with each category. (See FIGURE 3) Moody lists components of the office of the future or the paperless office as word processing, personal computers, electronic mail, computer assisted retrieval, computer output microfilm, facsimile devices, teleconferencing, and reprographics. (See FIGURE 4)

A report of the Joint Economic Committee of the Congress of the United States states:

> High technology industries consist of heterogeneous collections of firms that share several attributes. First, the firms are labor-intensive rather than capital-intensive in their production processes, employing a higher percentage of technicians, engineers and scientists than other manufacturing companies. Second, the industries are science-based in that they thrive on the application of advances in science to the marketplace in the form of new products and production methods. Third, R & D inputs are much more important to the continued successful operation of high technology firms than is the case for other manufacturing industries.
>
> Although analysts have reached no general agreement on a definition of a high technology industry, there is a general agreement that the following Standard Industrial Classification (SIC) industries qualify: chemicals and allied products (SIC 28); machinery, except electrical (SIC 35); electrical and electronic machinery, equipment and supplies (SIC 36); transportation equipment (SIC 37); and measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks (SIC 38).

During the summer of 1982, Dr. Edward Q. Moulton, Chancellor of the Ohio Board of Regents, appointed numerous persons to an Advisory Committee on Two-Year Campus Academic Affairs. The Advisory Committee is an umbrella structure for several subcommittees and task forces, one of which is the Task Force on High Technology. The charge to the TFHT is as follows:

> "The Task Force will examine the issues relative to the development of high technologies and will recommend policies the Regents should consider adopting in this area."

The TFHT appointed a subgroup to define high technology. The subgroup proposed the following definition:

> The term "high technology" characterizes: processes, products and applications stemming from the latest scientific and technical development; utilization of high levels of artificial or machine intelligence and information/decision capabilities; and extension of human manual and intellectual capacities through the use of computer technology and the application of sophisticated physical principles.

The Task Force adopted this definition unanimously at its meeting on February 3, 1983.

* * * * * * * * * * * * * * *

A future that isn't forecast is like an accident waiting to happen.

Earl C. Joseph, 1982

Figure 3

ADVANCING TECHNOLOGIES OF THE 21st CENTURY

Technology Category	Key Words
COMMUNICATIONS	Computerized PBX's, Satellites, Telemarketing, Cable TV, Videodisc, Videotex, Teletext, Telemarketing, Photonics, Optical Fibers, Mass Memory Exchange, Industry and Office Automation, Lasers.
COMPUTERS	Very Large Scale Integration (VLSI), Photonics, Photo Computers, Holographic Memories, Verbalization, Voice Synthesis, Voice and Pattern Recognition, 5th Generation Computers (Japan), Artificial Intelligence, Integrated Circuits, Microchips, Microprocessors, Word Processors, Computer Graphics, CAD, CAM, COMCAM, GENPLAN, EFT, FMC, FMS, Robotics.
ROBOTIZATION	Productivity, Cost Benefits, Quality, Up Time, Employee-Lay Offs, Retirement, Machine Intelligence, Machine Sensing, Machine Vision, Electronic Neuron, Photo Computers, Gray Imaging, Verbalization, Pattern Recognition and Selection, Microprocessor, Microchip, Reindustrialization, World Cars, Mergers, Electronics, Steel, Textiles, Survivability.
BIOTECHNOLOGY	Bioengineering, Genetic Engineering, Gene Splicing, DNA, RNA, Hybridomas, Mutants, Enzymes, Plasmids, Regeneration, Green Revolution, Cloning.
ELECTRIC POWER	Photovoltaic Cells, Solar Energy, Fuel Cells, Helium Gas Turbines, OTEC, Fusion, Liquid Metal Breeders, Geothermal, Windmills, Biomass, Magneto-Hydrodynamics (MHD).
FUELS TECHNOLOGIES	Coal Gasification, Liquefaction, Shale, Tar Sands, Catalysis, Syncrude, Synfuels, Gasohol, Methane, Ethanol, Biomass.
MATERIAL TECHNOLOGIES	New Microsciences, Ceramics, Synthetic Fibers, Fiber Reinforced Composites, Polymers, Epoxies, Glass Beads, Metallic Glass, Plasma Process, Splat Cooling.
BODY TECHNOLOGIES	Artificial Organs: Hearts, Kidneys, Lungs, Valves, Blood Vessels, Bone Conduction Hearing, Electronic Vision. Fluoric Ion Application, Polystyrene, Polyurethane, Teflon, Implants, Transplants, Utah Arm, Leg, Hand--Bionics.

SOURCE: W. Clyde Helms, Jr., President, Occupational Forecasting, Incorporated.

FIGURE 4

THE OFFICE OF THE FUTURE OR THE PAPERLESS OFFICE*

WORD PROCESSING

development, revision, and production of documents such as letters, reports, labels, and directories.

PERSONAL COMPUTERS

small but powerful computers that can provide groups of users with capabilities such as filing, retrieval, sorting, word processing and report creation without the need for extensive programming or reliance on a large central processor.

ELECTRONIC MAIL

electronic work stations and message systems to send messages to one or more addresses where the communications can be read on their electronic equipment and respond at their convenience.

COMPUTER ASSISTED RETRIEVAL (CAR)

a combination of a computer system and a microfilm storage and retrieval device to get information from massive files that are stored on roll microfilm or microfiche.

COMPUTER OUTPUT MICROFILM (COM)

a computer process which produces information on microfilm instead of on paper.

FACSIMILE DEVICES

a way of transmitting pages of copy, such as correspondence or contracts, over long distances.

TELECONFERENCING

a method of simultaneous remote communication involving many people that may be as simple as a speakerphone conference call or as elaborate as a live video conference with terminals or facsimile devices for transmitting images, whether graphic or narrative.

REPROGRAPHICS

the use of electronics in the preparation of documents that can include input of original text through word processors linked directly to electronically controlled equipment that can set type in a multitude of type styles and sizes as well as automatically generate logos, form outlines, and charts and graphs.

*Source: H. Gerald Moody, "The Face of the Future: The Office," Voc Ed, January/February, 1982, pp. 36 and 83.

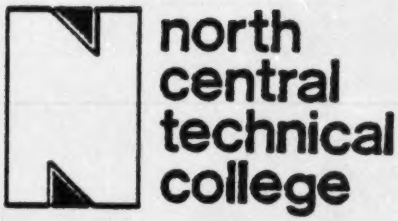
APPENDIX F

WELCOME

TO THE

HIGH TECHNOLOGY SEMINAR

MARCH 17,1983



MANSFIELD, OHIO 44901

A brief explanation of each demonstration is provided on the following pages. All demonstrations are scheduled between 1-4 p.m. and are located in rooms in the Technical Education Center as indicated. Please make yourself "at home" and take the opportunity to see all demonstrations.

. OPERATING SYSTEM/HEWLETT-PACKARD 3000-64 — ROOM 114-TEC

North Central Technical College's faculty will provide demonstrations of student programs showing Hewlett-Packard capabilities in accounting applications.

Demonstration Hosted By: NCTC Faculty

. COMPUTER GRAPHICS — ROOM 179-TEC

Hewlett-Packard will demonstrate Business and Presentation Graphics on the HP 3000 general purpose computer. Featured will be HP color graphics terminals and HP hard copy graphics plotters.

Demonstration Hosted By: Hewlett-Packard Company

. HEWLETT-PACKARD SLATE/3000 — ROOM 179-TEC

Hewlett-Packard will demonstrate HPSLATE/3000, a friendly menu-driven word processing package for the HP 3000 system.

Demonstration Hosted By: Hewlett-Packard Company

. PERSONAL COMPUTERS — APPLE II — ROOM 114-TEC

We will demonstrate software programs on Apple computers.

Demonstration Hosted By: NCTC Faculty

. COMPUTER AIDED DRAFTING — ROOM 168-TEC

An AUTO-TROL CAD-CAM (Computer Aided Design-Computer Aided Manufacturing) system will be demonstrated. Features to be demonstrated include:

1. Numerical Control Family of Parts
2. Flat Pattern Development
3. Drafting
4. Other Applications

Demonstration Hosted By: AUTO-TROL Technology Corporation

. COMPUTER NUMERICAL CONTROL — ROOM 127-TEC

A HURCO Numerical Controller will be used to demonstrate the programming of common mill and drill machining operations requiring control of 2 or 3 axes. A plotter is used to indicate the tool paths.

An Olivetti L1 M20 Personal Computer with interactive graphics capability will be used to demonstrate the translation of common mill and drill machining operations to a variety of numerical control machine languages.

General Electric H and L series Numerical Control Units will be used to demonstrate the programming of common mill and lathe operations.

Demonstration Hosted By: General Electric Company
Garco Machinery, Inc.

. PROGRAMMABLE CONTROLLERS — ROOM 186-TEC

A description of a programmable controller and a demonstration of its capabilities will be provided. An Allen-Bradley PLC-2 programmable controller will be used to demonstrate the following:

1. Control circuits
2. Timers and Counters
3. Graphics
4. Report Generation

Demonstration Hosted By: KBZ Electric

. PROGRAMMABLE CALCULATORS — ROOM 087-TEC

1. There will be a written explanation of the capabilities of the calculator. (Copies will be available)
2. Fifteen calculators and three printers will be set up.
3. A short program will be written on the board for anyone to try on a calculator. (Copies will be available.)
4. A list of programs studied in the Math 123 calculator laboratory will be shown. (Copies will be available.)
5. A set of detailed lesson plans for the Math 123 calculator laboratory will be on display. (No copies available.)

Demonstration Hosted By: NCTC Faculty

. TECHNICAL PROGRAMMING — ROOM 186-TEC

This demonstration contains several activities utilizing several Apple II computers. Each Apple II computer will demonstrate the following:

1. How to use the Apple II computer. An Auto-Tutorial user program with graphics is used to accomplish this objective.
2. How to read a vernier caliper.
3. Control of a heating/cooling cycle.
4. Typical programs written by students enrolled in the Technical Programming 199 course.
5. Electronic circuit diagrams generated by students who used a graphics tablet.
6. Data acquisition. The computer will collect temperature data and display the data in graphic form.
7. Digital storage scope interface. When given a trigger level, the computer will capture and display 200 data points of an input voltage waveform.

Demonstration Hosted By: NCTC Faculty

. MICRO COMPUTER DEVELOPMENT SYSTEM — ROOM 186-TEC

An Intell Microcomputer Development System will be demonstrated. Features to be demonstrated include:

1. Text Editing
2. Program Assembly
3. In-circuit Emulation
4. PROM Programming

Demonstration Hosted By: Arrow Electronics, Inc.
Intell Electronic Corporation

. ELECTRONIC DATA ACQUISITION — ROOM 186-TEC

A continuous graphics display will be used to demonstrate how a Digital Equipment Corporation MINC computer can be used in the real-time data acquisition environment.

Demonstration Hosted By: Digital Equipment Corporation

. SMART TERMINALS AND VAX-750 — ROOM 186-TEC

Digital Equipment Corporation (DEC) GIGI terminals will be connected to a VAX-750 computer. The system will be used to demonstrate the following:

1. REGIS (Remote Graphics Instruction Set) Application
2. Programming Languages such as DCL, BASIC, FORTRAN, and PASCAL
3. Electronic Mail

Demonstration Hosted By: Digital Equipment Corporation

. HYDRAULIC TRAINERS — ROOM 085-TEC

The Sperry Vickers fluid power trainers will be used to demonstrate several hydraulic circuits which are typically used in industrial applications.
A slide/audio presentation of hydraulic principles and circuits will be provided.
Cut-away models of hydraulic components will be on display.

Demonstration Hosted By: NCTC Faculty

. WORD PROCESSING — ROOM 103-TEC

Will give a general overview of the word processing system used at NCTC including a description of various word processing systems used in businesses from the stand-alone to the large cluster system with massive storage. Also, a brief history of word processing and an explanation of the benefits and influences word processing has in the business world today. Following with a 20-minute demonstration of text edition capabilities and a short review of the record keeping function.

Demonstration Hosted By: Computer Dynamics

ERIC Clearinghouse for Junior Colleges
8118 Math-Sciences Building
University of California
Los Angeles, California 90024

JUL 29 1983